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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/800,891	03/08/2001	Kentaro Nakamura	826.1695/JDH	6819

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EXAMINER	
SEDIGHIAN, REZA	

ART UNIT	PAPER NUMBER
2633	7

DATE MAILED: 07/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/800,891	NAKAMURA ET AL.	
	Examiner	Art Unit	
	M. R. Sedighian	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 4-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 4-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *5*.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

1. This communication is responsive to applicant's 04/19/2004 amendments in the application of Nakamura et al. for "Bidirectionally transmittable optical wavelength division multiplexed transmission system" filed 3/8/2001. The amendments have been entered. Claims 1-2 and 4-7 are now pending.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1 and 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu et al. (US Patent No: 5,365,368) in view of Davies et al. (US Patent No: 6,751,414).

Regarding claim 1,Hsu teaches an optical WDM transmission system (56, 98, fig. 2) in a bi-directional optical WDM transmission system (col. 2, lines 38-53) for transmitting an upstream and downstream optical signal along a single line (col. 2, lines 54-66), comprising: a first transmitting unit (72, fig. 2) setting the upstream optical signal (col. 2, lines 55) and a second transmitter unit (92, fig. 2) setting the downstream optical signal (col. 2, lines 55-62); and a distributed amplifier unit (50, 52, fig. 2) having a first pumping light source (53, fig. 2) for pumping only the upstream optical signal (col. 3, lines 20-30) and a second pumping light source (63, fig. 2) for pumping only the downstream optical signal (col. 3, lines 26-28), wherein the first pump light source provide backward pumping for the upstream optical signal (col. 2, lines 20-51) and the second pump light source provide backward pumping for the downstream optical signal (col. 3, lines 25-29). Hsu differs from the claimed invention in that Hsu does not specifically

disclose transmitting a first band and a second band of optical signals. However, Hsu teaches EDF amplifier can be used to amplify optical signals in the 1.53-1.58 μm band (col. 1, lines 31-34). Davies teaches the transmission and amplification (20, 22, fig. 7) of band of optical signals (col. 9, lines 63-67, col. 10, lines 1-7). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate transmission units that can transmit bands of optical, as it is taught by Davies, for the optical transmitter units in the transmission system of Hsu in order to transmit and amplify a plurality of different optical signals.

Regarding claim 5, Hsu teaches multiplexing/demultiplexing units (56, 66, fig.2) located at one or both ends (col. 3, lines 23).

Regarding claim 6, Hsu disclose a multilayer thin film filter unit (76, 96, fig. 2) for separating the upstream and downstream optical signals from each other (col. 3, lines 46-49, col. 3, lines 55-59). As to a discrete amplifier unit for upstream and downstream optical signals, it is well known to incorporate optical amplifiers along the transmission lines to boost the signal strength and to further increase the transmission distance.

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu et al. (US Patent No: 5,365,368) in view of Davies et al. (US Patent No: 6,751,414) and in further view of Mollenauer et al. (US Patent No: 4,699,452).

Regarding claim 2, the modified optical transmission system of Hsu and Davies differs from the claimed invention in that Hsu and Davies do not specifically disclose the amplifier unit performs Raman amplification. Mollenauer teaches a method of optical amplification (figs. 4, 5, 6) such as the one of Hsu with Raman amplification effects (col. 2, lines 65-68, col. 3, lines 1-5,

col. 7, lines 5-25). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention that the optical amplification system of Hsu incorporates Raman effects to avoid the introduction of significant amounts of SBS-caused pump noise.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu et al. (US Patent No: 5,365,368) in view of Davies et al. (US Patent No: 6,751,414) and in further view of Kinoshita (US Patent No: 6,342,965).

Regarding claim 4, the modified optical transmission system of Hsu and Davies differs from the claimed invention in that Hsu and Davies do not disclose the first and second pumping light includes a plurality of light sources of different wavelengths. Kinoshita teaches first (123-1′, fig. 49) and second pump lights (123-3′, fig. 49) that includes a plurality of light sources of different wavelengths (123-1A′, 123-1B′, 123-3A′, 123-3B′, fig. 49). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate first and second pump lights with light sources of different wavelengths such as the one of Kinoshita for the pump lights in the modified optical amplification system of Hsu and Davies in order to provide a wide band amplification system.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu et al. (US Patent No: 5,365,368) in view of Davies et al. (US Patent No: 6,751,414) and in further view of Yang (US Patent No: 6,130,775).

Regarding claim 7, the modified optical transmission system of Hsu and Davies differs from the claimed invention in that Hsu and Davies do not disclose a circulator unit located at one

or both ends of the amplifier unit. Yang teaches optical circulators (220, 225, fig. 2) for transmitting optical signals (col. 2, lines 31-40) to an amplifier (250, fig. 2). Therefore, it would have been obvious to an artisan at the time of invention to incorporate optical circulators such as the ones of Yang for optical couplers in the modified optical transmission system of Hsu and Davies in order to optically couple the transmitted light to the amplifier units. As to a discrete amplifier unit for upstream and downstream optical signals, it is well known to incorporate optical amplifiers along the transmission lines to boost the signal strength and to further increase the transmission distance.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. R. Sedighian whose telephone number is (703) 308-9063. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703) 305-4729. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M.R. SEDIGHIAN
Primary Examiner
Art Unit: 2633